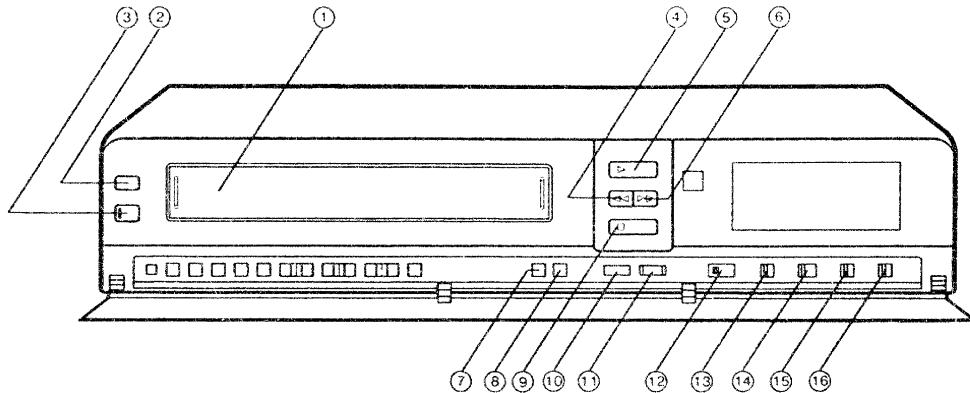


# SECTION 1

## GENERAL DESCRIPTION

### FRONT PANEL



**① Cassette Compartment**

Slide the cassette into the unit until the mechanism draws it in automatically.

**② EJECT button**

Press this button to remove the cassette when the power is on and off.

**③ ON/STANDBY button**

This button is used to turn the VTR on and off.

**④ Rewind button (REW)**

Press this button to rewind tapes. During the playback mode, pressing this button will allow you to play tapes in reverse rapidly.

**⑤ PLAY button**

Press this button to play back a pre-recorded cassette. The PLAY indicator comes on. Frame advance can be performed while in the still mode.

**⑥ Fast forward button (FF)**

Press this button to fast forward the tape. During the playback mode, pressing this button will allow fast forward playback.

**⑦ DIGITAL TRACKING button**

Tracking is automatically set for an optimum condition. (Only in the playback mode)

**⑧ Recording tape speed select button (SP/LP-EP)**

When set to the SP position, recording in the SP (Standard Play) mode is possible; when set to the LP position, recording in the LP (long play) mode is possible. When in NTSC mode, the recording tape speed is switched between SP and EP.

**⑨ STOP button**

Press this button to stop the tape or interrupt the fully-automatic function.

**⑩ PAUSE/STILL button**

Used to operate the VTR in three different ways:

- To temporarily stop the tape in the recording mode.
- To view a still picture in the playback mode.
- To advance the picture frame by frame, by using the PLAY button after this button is pressed.

**⑪ Recording button (REC)**

This is used for recording.

**⑫ VIDEO SYSTEM switch (AUTO/PAL, MESECAM /SECAM/NTSC)**

Used to switch the video system setting positions according to the receiving broadcast systems or the video format of the tape to be played back.

Normally place this switch to the "AUTO" position.

**⑬ NTSC (3.58/4.43) select switch**

Select NTSC 3.58 or NTSC 4.43 according to a TV set used.

**⑭ Picture select switch**

HQ: When recording in this position, enabling distinct picture for recording and playback.

We recommend this position for recording.

EDIT: Set in this position when copying.

N/R: For playing back a rental tape.

**⑮ COUNTER select switch**

**(PAL, SECAM, MESECAM/NTSC)**

Set this switch according to the video format of the tape used, when using the linear time counter.

**⑯ TAPE select switch**

**PAL, SECAM, MESECAM mode**

Use the E-180 position when using a shorter tape than an E-180 video cassette.

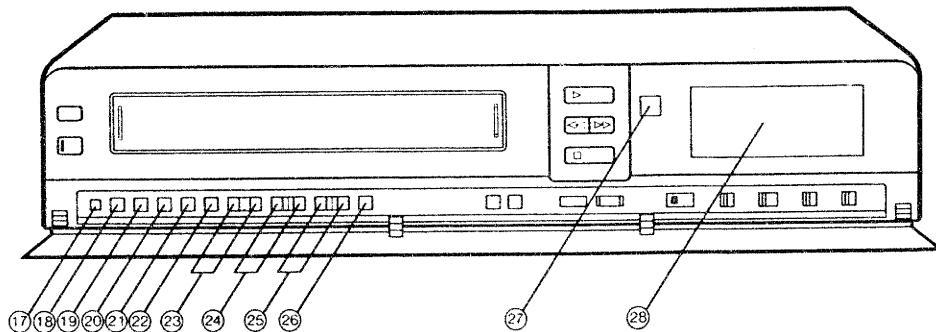
Use the E-240 position when using an E-240 video cassette.

**NTSC mode**

Use the T-120 position when using a shorter tape than a T-120 video cassette.

Use the T-160 position when using a T-160 video cassette.

# FRONT PANEL



⑯ **CLOCK SET button**

Used to set or reset the VTR clock. When this button is pressed once, the unit enters the clock set mode. When the button is pressed again after setting the VTR clock, the VTR clock starts to work.

⑯ **PRESET button**

Used to preset the channel.

⑯ **SKIP button and CFM button**

Used to skip the desired channels in channel presetting. Also used to check the previously inputted programme data. Once this button is pressed, the programme scanning starts to continuously show the contents of the programme on the fluorescent display.

⑯ **CLEAR button**

Used to cancel to programming data that has been preset to programme numbers 1 through 8. After pressing the PGM button.

⑯ **OTR button and BAND button**

OTR button: Used to perform recording in 30 minute periods in normal mode. (Up to 4 hours)

Used to specify the timer-off time in units of 30 minutes in the timer mode.

BAND button: Used to switch the frequency tables for VL, VH, UHF as long as the PRESET button is pressed to ON.

⑯ **PGM button**

Used to start programmable timer operation.

⑯ **TRACKING/V-LOCK and SET (+)/SET (-) and SEARCH button**

TRACKING button: When this button is pressed in the tape play mode, tracking adjustment is done.

V-LOCK button: When this button is pressed in the still mode, vertical lock adjustment is done.

SET (+) button: This button is used for clock and timer programme setting. The digits counts up by pressing this button.

SET (-) button: This button is used for clock and timer programme setting. The digits counts down by pressing this button.

SEARCH button: This button is used for channel presetting. The tuning channel moves to a higher channel by pressing this button.

AFT button:

This button is used to switch over the ON/OFF setting of the AFT (Auto Fine Tuning) function when presetting the channels.

⑯ **PICTURE CONTROL and FINE (-/+)** button and SHIFT (-/+)

PICTURE (SOFT/SHARP): Use this button to make a playback picture softer or sharper.

FINE (-/+)

buttons: Used for channel presetting. When you want to move to a lower channel, use the FINE (-) button to fine tune. Use the FINE (+) button when you want to move to a higher channel for best possible reception.

SHIFT (-/+)

buttons: These buttons are used for clock and timer programme settings. Use the SHIFT (+) button to change the setting position to the next. Use the SHIFT (-) button to change the setting position to the previous.

⑯ **Channel select button (up and down)**

Use to select the specific channel which you wish to view or record.

Down button (V): When this button is pressed once, the channel digit decreases by one.

Up button (A): When this button is pressed once, the channel digit increases by one.

⑯ **TIMER button**

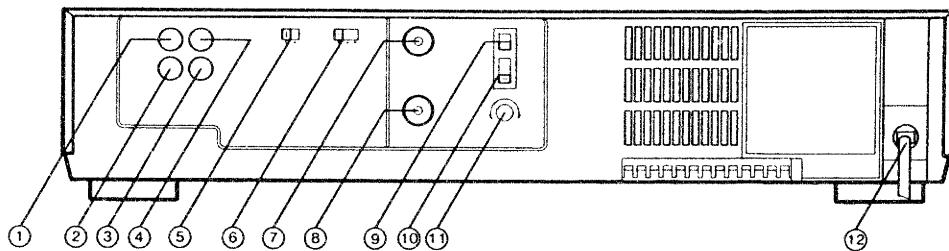
Used to enter the timer mode. To release the timer stand-by mode, press it again.

⑯ **Infrared remote control receiver**

This sensor is used for receiving infrared signals from the Remote Control Unit.

⑯ **Fluorescent display**

## REAR PANEL



① **VIDEO IN socket**

For connection to a video output line.

② **VIDEO OUT socket**

For connection to a monitor TV or a video input socket.

③ **AUDIO OUT socket**

For connection to a monitor TV or an audio input socket.

④ **AUDIO IN socket**

For connection to an audio output line.

⑤ **TV SELECT switch**

(NTSC 4.43/PAL 60 (NTSC ON PAL))

Used when playing back NTSC recorded tapes.

⑥ **TUNER switch (AUTO, B/G, I)**

Switch this switch when you receive a broadcast programme interfered with noise in an area where a NICAM programme (England area) is aired.

Use the "AUTO" position when a normal TV programme is received or recorded.

Use the "B/G" or "I" position to the broadcast system when NICAM programme is broadcast from the TV station.

⑦ **AERIAL IN socket**

Connect the aerial lead to this terminal.

⑧ **AERIAL OUT plug**

Connect this terminal to the socket on the TV.

⑨ **TEST SIGNAL switch**

Provides a test signal to assist you to tune your television receiver to the output of the VTR.

⑩ **TV SYSTEM switch (G,I,K)**

Select the "G" or "I" or "K" position according to the TV set connected to the VTR.

SYSTEM G: Use this position when the VTR is connected to a PAL/SECAM G type TV set.

SYSTEM I: Use this position when the VTR is connected to a PAL I type TV set.

SYSTEM K: Use this position when the VTR is connected to a PAL/SECAM K type TV set.

When you receive an NTSC programme or when you playback an NTSC tape, the VTR outputs the video signal in the M system mode automatically even if the switch is set to any of these setting positions.

⑪ **UHF CHANNEL control**

Adjust the output from the VTR to your television receiver to any channel.

Europe: E30 to E39 channel

USA: US26 to US38 channel

JAPAN: J25 to J37 channel

China: C22 to C26 channel

⑫ **Power lead**

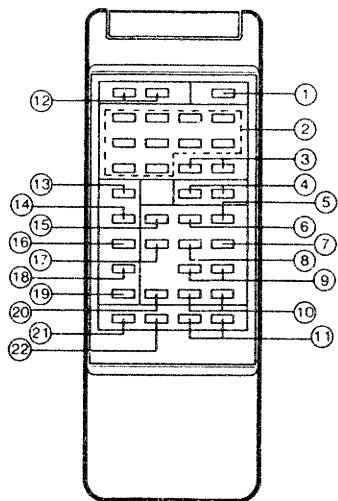
Connect to a wall AC outlet.

**Note:**

For the IN sockets of above items ① and ④, the VTR is automatically switched into the line input mode immediately after the external pins are inserted into these sockets.

# REMOTE CONTROL UNIT

The buttons that are not followed by explanations have the same functions as the buttons similarly marked on the VTR.



## ① ON/STANDBY button

This button is used to turn the VTR on and off.

## ② 10 keys

10 keys: Used to directly select the desired channel. When you select channels 1 to 9, combine the 0 key and any of the keys 1 to 9 make channels such as 01, 02, 03, etc.

Also used to specify the index number when performing index skip search.

## ③ Channel select buttons (up/down)

To initiate TV channel programming.

## ④ Record buttons (REC)

Press to start recording. The REC indicator comes on. When recording, be sure to press the two buttons simultaneously.

## ⑤ Fast forward button (FF)

## ⑥ STOP button

## ⑦ X2 button

Used to playback a tape at a speed double the normal play mode.

## ⑧ PLAY button

## ⑨ SLOW buttons

This button is used to slowly play back the picture.

Use the 1/12 button to perform the 1/12 slow playback. Use the 1/6 button to perform the 1/6 slow playback.

## ⑩ TRACKING/SLOW TRACKING button

- In the play mode, press this button to adjust tracking.
- In the slow mode, if the noise appears on the screen, keep pressed these buttons until you obtain the best possible image on the screen.

## ⑪ TIMER buttons

Used to make the VTR enter the timer mode, especially for the one-touch timer recording. When doing the timer recording, be sure to press the two buttons simultaneously.

## ⑫ PICTURE SHARPNESS (SOFT/SHARP)

Use this button to make a playback picture softer or sharper.

When these two buttons are pressed simultaneously, tracking position is adjusted to the center.

## ⑬ INDEX button

Used to perform index search and index skip search.

## ⑭ TIME SEARCH button

Used to have the VTR enter the time search function mode.

## ⑮ Rewing button (REW)

## ⑯ ZERO RETURN button

Used to rewind or fast forward the tape around "OHOOMOOS" position that is set with the RESET button.

## ⑰ PAUSE/STILL button

## ⑱ REMAIN/CLOCK button

Use to switch the display between time, counter and tape remaining display cyclically.

## ⑲ COUNTER RESET button

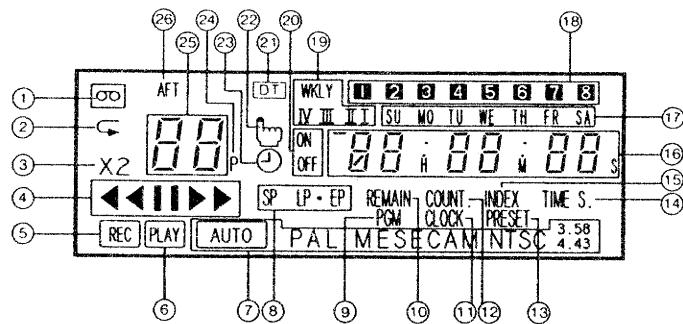
Used to reset the counter reading.

## ⑳ DT (DIGITAL TRACKING) button

## ㉑ SP/LP·EP select button

## ㉒ OTR button

# INDICATORS



## ① Cassette indicator

The lamp is lit when a cassette is loaded, even when the power is off. The lamp flashes when a tape is being inserted or ejected.

## ② Repeat play back indicator

Lights when the VTR enters the repeat playback mode after the PLAY button is kept pressed for six seconds in the play mode.

## ③ X2 indicator

Lights when the X2 button is pressed.

## ④ Multifunctional indicators

See the indicator's table below.

### Indicator's table

Play	Still	Record	Double Speed Play
▶ PLAY	■ PLAY	▶ REC	▶ PLAY
REW ◀◀	FF ▶▶	Frame ■▶ PLAY	Slow ■▶ PLAY
Reverse Picture Search ◀◀ PLAY	Forward Picture Search ▶▶ PLAY	Recording Pause ■ REC	

## ⑧ Tape Speed indicator (SP/LP·EP)

When playing back a pre-recorded tape, the tape speed mode is automatically indicated.

When recording, the tape speed, to which the VTR is set, is indicated in the display.

## ⑨ PGM indicator

Lights when the PGM button is pressed.

## ⑩ REMAIN indicator

Lights when the REMAIN/CLOCK button is pressed so that the remaining time is displayed.

## ⑪ CLOCK indicator

Lights when the CLOCK SET button is pressed.

## ⑫ COUNT. indicator

Lights when the REMAIN/CLOCK button is pressed so that the VTR enters the counter mode.

## ⑬ PRESET indicator

Lights when the PRESET button is pressed.

## ⑭ TIME S. indicator

Lights when the TIME SEARCH button is pressed.

## ⑮ INDEX indicator

Lights when the INDEX button is pressed.

## ⑯ Multi window

## ⑤ REC indicator

Lit when the unit is in the REC mode or REC pause mode.

## ⑥ PLAY indicator

Lights when the VTR is in the play mode or when the VTR is in the mode that is accompanied with the "PLAY" display in the above indicator's table.

## ⑦ VIDEO SYSTEM indicator

Lights according to the broadcast system that the VTR receives and the video format of the tape being played back.

# INDICATORS

---

⑯ **Day indicator**

Shows the current day for the VTR clock and the day when the timer programme will begin.

⑰ **Programme number indicator**

These lamps indicate the programme number into which a programme setting has been entered when setting the programmable timer.

⑲ **Week indicator**

Lights when setting the week.  
(I → II → III → IV → WKLY).

⑳ **Programme timer start and end time indicators (ON/OFF)**

Light during timer start and end setting, and when the CFM button is pressed.

㉑ **DT indicator**

Lights when the VTR is in the digital tracking mode.

㉒ **OTR indicator**

Lights during one touch recording.

㉓ **Timer indicator**

Lights when the TIMER button is pressed.

㉔ **Channel position indicator**

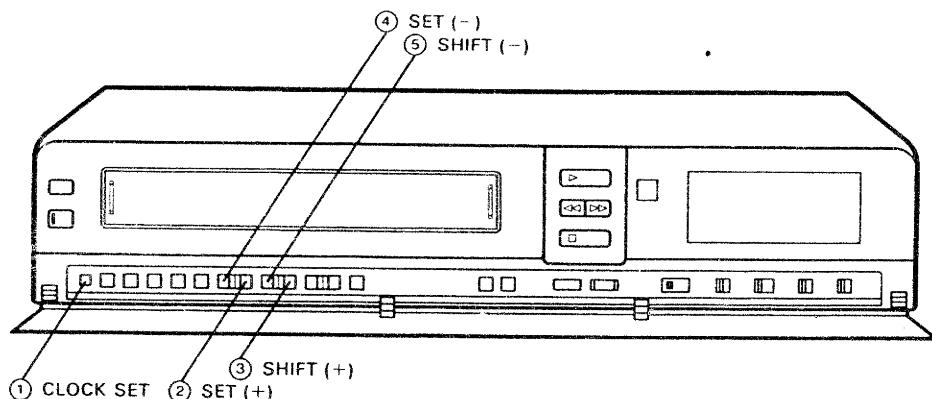
Lights when selecting the channel positions in channel presetting procedure.

㉕ **Shows the channel position number in channel presetting and channel number in timer programming and TV channel selection.**

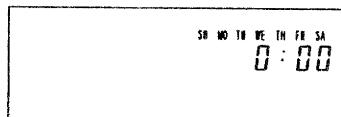
㉖ **AFT indicator**

Lights when the AFT button is pressed while the VTR is in the preset mode.

# SETTING THE VTR CLOCK

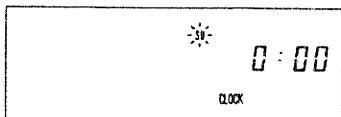


When the power lead is first connected to the AC outlet, or after an interruption of the power supply, the indication SU...SA 0:00 appears, flashing on the display as shown.



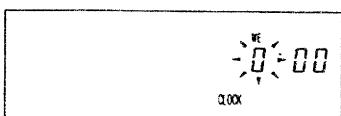
Example: To set for WE 19:25 (Wednesday, 19:25)

1. Press the CLOCK SET button ①



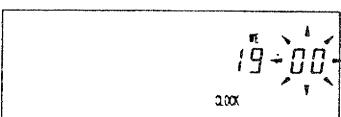
Press the SET (+) button ② to indicate "WE" on the indication of the day of the week.

2. Press the SHIFT (+) button ③ to set the flashing position to the hour indication.



Press the SET (+) button ② to indicate "19" on the hour indication.

3. Press the SHIFT (+) button ③ to set the flashing position to the minutes indication.



Press the SET (+) ② to indicate "25" on the minutes indication.

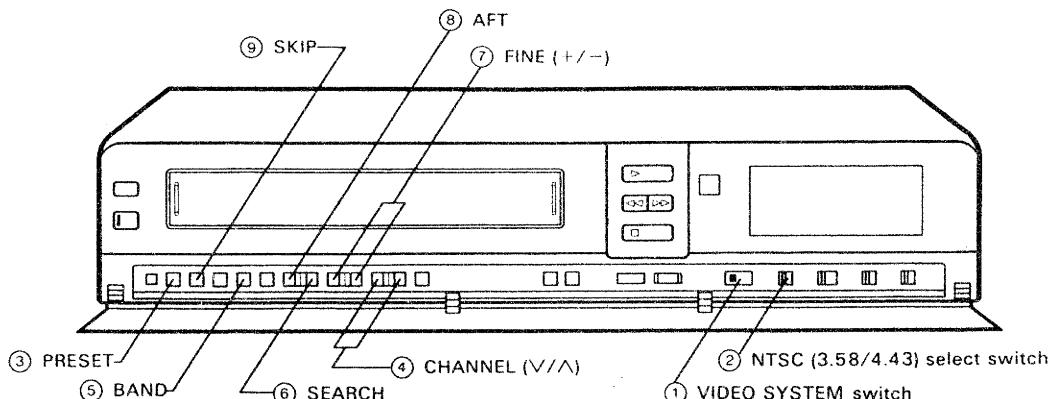
## Notes

1. When the SET (+)/(-) button ②, ④ is pressed once, the digit advances by one. When the button is held down, the digits advance rapidly.
2. If you pass the desired time inadvertently, use the SET (-) button ④ to turn back the hour, minutes and day of the week.
3. If you want to change the indication selected after the next setting step is performed, use the SHIFT (-) button ⑤ to return the indication to the previous setting indication.
4. Press the CLOCK SET button ① to display the current time. When the button is pressed, the clock starts from zero seconds.



To synchronize the clock with the radio time signal, press the CLOCK SET button ① on the last pip of the hourly time signal.

# CHANNEL SELECTION



The tuner built-in this VTR is a VS (Voltage Synthesized) tuner. And it has also an AFT (Auto Fine Tuning) function.

## PRESETTING THE CHANNELS

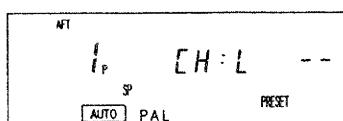
For example: To preset a UHF channel station to position 2.

1. Turn on the VTR.
2. Select the VIDEO SYSTEM switch ①

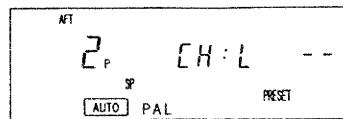
This switch is set according to the broadcast system in which you receive TV programmes. Normally set it to the "AUTO" position. If the receiving condition is bad and the auto-judging feature cannot be used, set this switch to the manual positions (PAL, MESECAM/SECAM/NTSC).

  - When receiving NTSC M signals, set the NTSC (3.58/4.43) select switch ② to the 3.58 position.

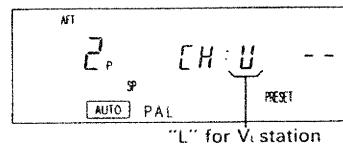
3. Press the PRESET button ③.



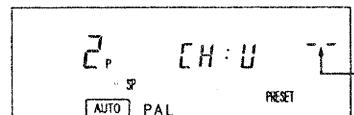
4. Set the channel position to be preset using channel select buttons (up/down) ④ or the number keys on the remote control unit ..... "2"



5. Press the BAND button ⑤ to select VL, VH, UHF station. (Select UHF for this example.)



6. Press the SEARCH button ⑥. Scanning starts from the lower channel. During scanning, the AFT indicator goes off.

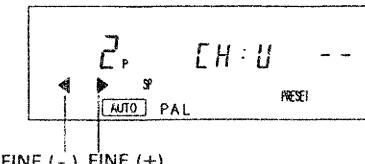


During scanning, these indicators move from the lower position to the upper position.

When the received channel is scanned, the AFT indicator lights up and scanning stops.

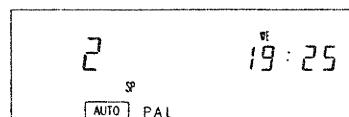
Press the SEARCH button ⑥ repeatedly until the desired channel is scanned.

7. If a good picture does not appear after searching, make fine adjustment using the FINE (+/-) buttons ⑦.



Adjust the channel so that you can obtain the best position picture. When the AFT button ⑧ is pressed, the channel returns to a position where the channel has stopped during auto searching operation.

8. Repeat steps 4 to 7 (up to 48 positions).
9. Press the PRESET button ③.



# CHANNEL SELECTION

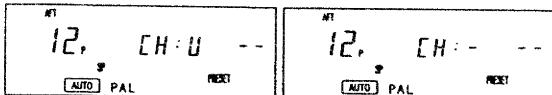
## Channel skip operation

This function enables you to skip the channel positions you do not want to select when selecting the channel positions with the channel select buttons (up/down).

1. Press the PRESET button ③.
2. Select the channel position you want to skip with the channel select buttons (up/down) ④.
3. Press the SKIP button ⑤. The indications shown below will appear with the SKIP button on or off.

Channel skip off

Channel skip on

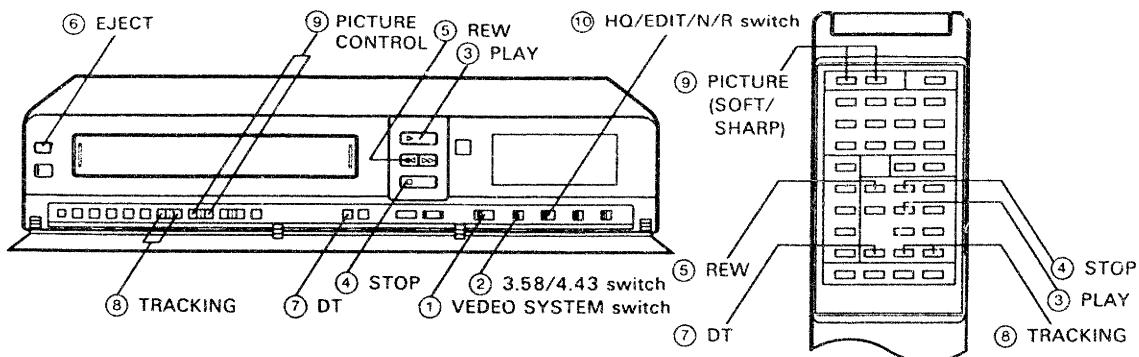


4. Press the PRESET button ③.

### Notes

1. Skip operation cannot be performed in the channel setting mode.
2. Direct channel selection is also possible even in the channel skip operation mode.
3. To release the channel skip function, perform steps 1 through 4 as for the channel skip setting operation.

# PLAYBACK



1. Insert a recorded cassette with a safety tab. The power will be turned on.

#### Notes

When a cassette without safety tab is inserted, the VTR automatically starts playback and rewinds the tape at the end of the tape and ejected. After ejection, the VTR will turn off automatically.

2. Set the VIDEO SYSTEM switch ① according to the video format of tape to be played. Normally set to the "AUTO" position. When the condition of the tape is bad and the type of the tape cannot be judged automatically, use the manual operation and set the switch to a corresponding video system position. For NTSC tape playback, there are two types: 3.58 and 4.43. set the 3.58/4.43 switch ② to the correct position according to a TV set used.
3. Press the PLAY button ③. Playback will begin. The indicator "DT" (DIGITAL TRACKING) blinks in the display panel, and the optimum tracking point is automatically set.
4. When playback is finished, press the STOP button ④.
5. Press the REW button ⑤ to rewind the tape.
6. Press the EJECT button ⑥ to take out the cassette.

## TRACKING CONTROL ADJUSTMENT

### DIGITAL TRACKING adjustment

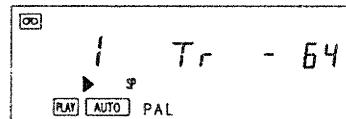
When the DT switch ⑦ is pressed in the play mode, the "DT" indicator lights in the display panel and the optimum tracking point is automatically set.

While the DT indicator is blinking, playback picture and sound may be distorted due to that tracking is being adjusted.

If you cannot obtain the best possible tracking point using the digital tracking function, adjust tracking by manual tracking operation.

## MANUAL TRACKING ADJUSTMENT

Pressing the TRACKING button ⑧ in the play mode will release the VTR from the digital tracking status. The VTR will then enter the manual tracking mode.



Tracking can be adjusted within the range of  $-64 < 0 > 64$ .

Adjust the tracking point so that the best possible picture and sound can be obtained. When the two TRACKING buttons are pressed simultaneously, the tracking point is set to the center "0".

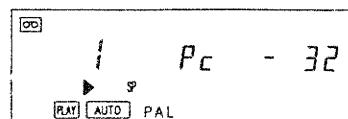
When the DT switch ⑦ is pressed, the VTR is set to the DIGITAL TRACKING mode again.

#### Note

When you play back a tape which has been recorded with another VTR, the noise on the screen may not be completely removed depending on the tape used.

## PICTURE SHARPNESS ADJUSTMENT

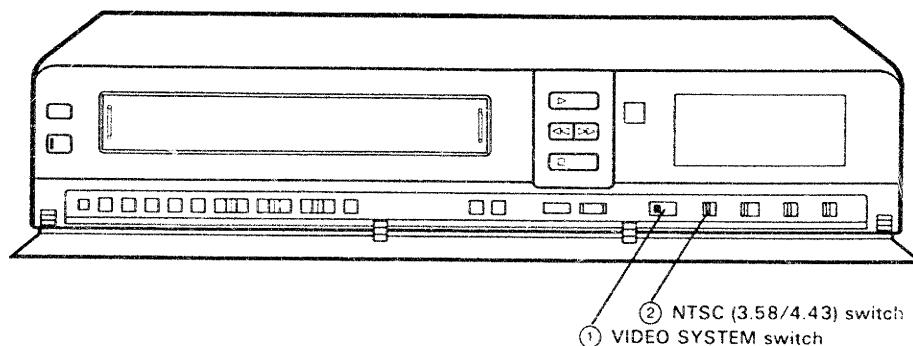
When the PICTURE CONTROL button ⑨ is pressed in the play back mode, the picture can be made softer and sharper.



Picture sharpness can be adjusted within the range of  $-32 < 0 > 32$ .

When the two PICTURE CONTROL buttons are pressed simultaneously, the picture sharpness point is set to the center "0".

# RECORDING



## BEFORE STARTING TO RECORD

The VIDEO SYSTEM switch ① and the NTSC (3.58/4.43) switch ② are switches that select received broadcast systems and tape recording formats.

Check these switches before starting recording operation.

AUTO...Use this position for normal operation.  
PAL/MESECAM, SECAM, NTSC3.58, NTSC4.43

...Use a corresponding broadcast system when you record a TV programme in a weak signal area where the broadcast signal cannot be judged with the switch set to AUTO.

- When you receive and record an NTSC M programme, set the NTSC (3.58/4.43) switch ② to the 3.58 position.

## POSITION OF THE VIDEO SYSTEM SWITCH AND INDICATOR FOR RECORDING BROADCAST SIGNAL or LINE IN VIDEO SIGNAL

Broadcast system	LINE in. video signal	VIDEO SYSTEM SELECTION			Tape recording video format	Indicator
		Mode	VIDEO SYSTEM switch position	NTSC (3.58/4.43)		
PAL I PAL B/G PAL D	PAL	AUTO	AUTO	—	PAL	PAL
		MANUAL	PAL/MESECAM	—	PAL	PAL
SECAM B/G SECAM D/K.K1	SECAM	AUTO	AUTO	—	MESECAM	MESECAM
		MANUAL	PAL/MESECAM	—	MESECAM	MESECAM
			SECAM	—	SECAM	SECAM
NTSC M	NTSC 3.58	AUTO	AUTO	3.58	NTSC	NTSC 3.58
		MANUAL	NTSC	3.58	NTSC	NTSC 3.58
—	NTSC 4.43	AUTO	AUTO	4.43	NTSC	NTSC 4.43
		MANUAL	NTSC	4.43	NTSC	NTSC 4.43

- This VTR cannot receive a SECAM L programme (broadcast in France).

A SECAM signal coming through the line input jacks (phono jacks), however, can be recorded with this VTR.

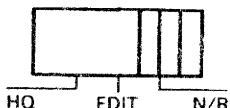
### Note

If the VIDEO SYSTEM switch is set to the "AUTO" position when recording a SECAM B/G or D/K.K1 programme, or when recording SECAM signals through the line input terminal, the tape is recorded in MESECAM. If you want to record in the proper SECAM, set this switch to the SECAM position.

# PLAYBACK

## N/R (NOISE REDUCER) SWITCH

When playing back a rental video or an overly copied tape which has a lot of noise in the video picture, you may reduce this noise by placing the HQ/EDIT/N/R switch ⑩ to the "N/R" position. In normal use, set this switch to the "HQ" position.

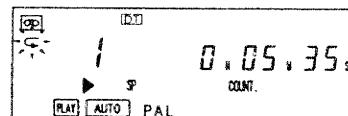


## REPEAT PLAYBACK

When this function is used during playback, the VTR automatically rewinds the tape to its end and starts playback from the beginning of the tape. (Maximum of ten repeat play operations)

After repeat playback is completed, the VTR enters the stop mode. ~

1. Press the PLAY button ③ (for about 6 seconds).  
The VTR enters the repeat playback mode.



2. After playing back to the end, the VTR automatically rewinds the tape and starts playback from beginning.
3. To resume normal playback, press the PLAY button ③ for about 6 seconds.

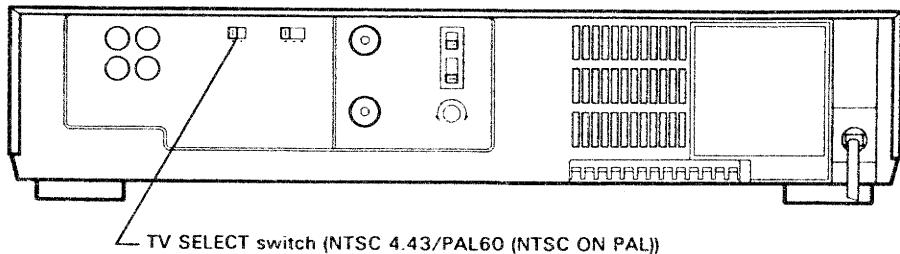
## SETTING POSITIONS OF THE VIDEO SYSTEM SWITCH AND OUTPUT VIDEO SYSTEMS, DEPENDING ON TAPES PRE-RECORDED IN DIFFERENT TYPES OF VIDEO FORMAT

Select the appropriate position with the VIDEO SYSTEM switch so that tapes pre-recorded in different types of video format can be played back. The following table shows output video systems.

Video format of pre-recorded tape	VIDEO SYSTEM switch		Output color	
	MODE	POSITION	Line output (Phono type)	RF output (rear panel)
PAL	AUTO	AUTO	PAL	PAL G, I, K
	MANUAL	PAL/MESECAM		
MESECAM	AUTO	AUTO	SECAM	SECAM G, K
	MANUAL	PAL/MESECAM		
SECAM	AUTO	AUTO	SECAM	SECAM G, K
	MANUAL	SECAM		
NTSC	AUTO	AUTO • NTSC 3.58	NTSC 3.58	NTSC M
		AUTO • NTSC 4.43	NTSC 4.43	NTSC G
	MANUAL	NTSC • NTSC 3.58	NTSC 3.58	NTSC M
		NTSC • NTSC 4.43	NTSC 4.43	NTSC G

- PAL recorded tape....Commercially available tapes pre-recorded in PAL system, and tapes on which PAL-B/G, PAL-I and PAL-D programmes have been recorded.
- MESECAM recorded tape....Tapes on which SECAM-B/G and SECAM-D/K/K1 programmes have been recorded with a MESECAM system VTR.
- NTSC recorded tape....Commercially available tapes pre-recorded in NTSC system, and tapes on which NTSC-M programmes have been recorded.

# NOTES ON PLAYBACK



## TV SELECT switch

This switch is provided to play back NTSC recorded cassette tapes with an NTSC 4.43 TV set or a PAL system TV set. Set this switch to the "NTSC 4.43" or "PAL 60 (NTSC ON PAL)" position. This VTR can play back NTSC recorded cassette tapes with a PAL video system TV set.

- PAL 60 (NTSC ON PAL)....Used to view an NTSC recorded tape with a PAL system TV set.  
In this case, the position of the VIDEO SYSTEM switch on the front panel should be placed at NTSC 4.43.
- NTSC 4.43....Used to view an NTSC recorded tape with an NTSC 4.43 system TV set. When you do not view an NTSC recorded tape with a PAL system TV set, the switch should be placed at this position.

## Playback of an NTSC tape recorded in the LP mode

With this VTR an NTSC tape recorded in the LP mode can be played back. But there are some points to be observed.

1. The quality of the playback picture is not guaranteed.
2. Special playback cannot be performed properly.
3. Tracking adjustment is always required when the tape is played back in the manual tracking mode.
4. The indicator "LP" appears in the display panel.

## Notes when using a PAL TV set for NTSC playback:

1. Use a TV set compatible with PAL video signals of PAL 60 (525 lines).

When the TV set, that is not compatible with PAL video signals of PAL 60, is used (when the TV set, that is compatible only with PAL video signals of PAL 50 (625 lines), is used) NTSC playback pictures may roll up and down. This is not malfunction of the VTR or the TV set. If your TV set is equipped with a V-HOLD control, it may be possible to stop the rolling of pictures by adjusting this control.

About PAL 50 and PAL 60 of PAL video signals:

- PAL 50: is a normal signal and its PAL video signal is 50 fields (625 lines).
- PAL 60: is a special signal and its PAL video signal is 60 fields (525 lines).

Some TV sets operate properly only with PAL 50 signals, some TV sets operate properly with both PAL 50 and PAL 60 signals.

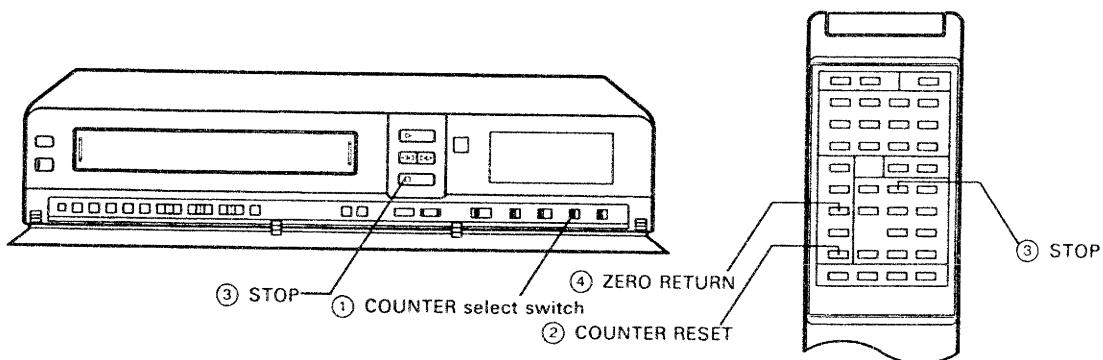
Therefore, if your TV set is switchable between PAL 50 (625 lines)/PAL 60 (525 lines), you can view an NTSC recorded tape in the PAL colour system with your own TV set.

2. Depending on the TV set used, the picture may shrink vertically and black bars may appear both at the top and bottom of the screen.  
This is not an indication of malfunction.
3. The special playback operations (double speed playback, still playback etc.) may produce a skewed image and a lot of noise on the picture.
4. If the tape prerecorded in the SP mode is played back in the picture search mode, the picture is reproduced with no colour.

### Note

For viewing an NTSC recorded tape, we recommend you to use an NTSC 3.58 or NTSC 4.43 TV set.

# LINEAR TIME COUNTER AND ZERO RETURN

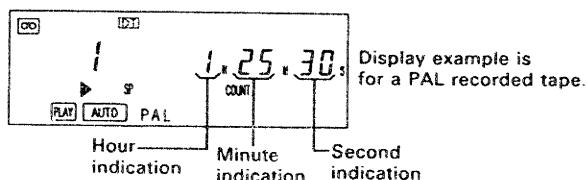


## LINER TIME COUNTER

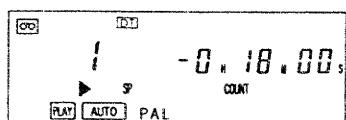
This VTR utilizes the linear time counter system. The linear time counter indicates tape run length on the display by the second.

The linear time counter installed in this VTR should be set, according to the types of video format of tapes to be recorded from or to be played back, with the COUNTER select switch (PAL, SECAM, MESECAM/NTSC) ①.

When the tape runs one hour twenty-five minutes thirty seconds:



When the tape is rewound after 0H00M00S:



### Notes

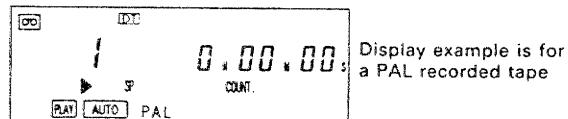
1. When the cassette is removed by pressing the EJECT button, the linear counter will return to 0H00M00S.
2. The counter does not work at the unrecorded section.

## ZERO RETURN

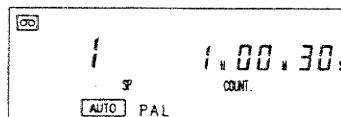
This function is very useful to easily find the desired scenes to be replayed later.

You can set the VTR so that the tape stops around 0H00M00S of the counter reading during rewinding and fast forward mode.

1. Press the COUNTER RESET button ② on the remote control unit at the point where the desired scenes to be replayed later begins while in the record and play modes.

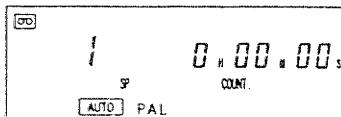


2. Press the STOP button ③ to stop the tape after the playing or recording is completed.

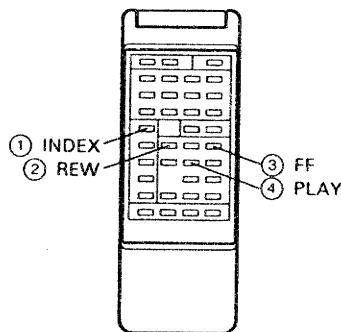


3. Press the ZERO RETURN button ④.

The tape will be rewound around "0H00M00S" of the counter reading. When the ZERO RETURN button is pressed after the tape is rewound before counter reading of "0H00M00S", the tape will be fast forwarded around "0H00M00S" before stopping.



# INDEX SEARCH OPERATION



The VTR has VHS index search system function. This system performs the index search or skip search, using the index signal marked on the tape.

## Index Search

Each time the VTR detects an index signal in the fast-forward or rewind mode, it plays back the beginning of each programme for 5 seconds.

## Skip Search

When the VTR detects the selected index signal in the fast-forward or rewind mode, it automatically enters the playback mode.

## MARKING THE INDEX SIGNALS

### Automatic marking

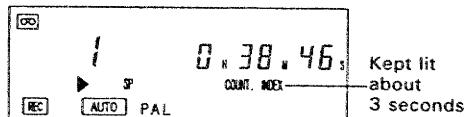
When recording starts from the stop mode, an index signal is automatically marked on the tape. An index signal is also automatically marked when timer recording and one touch recording starts.

### Note

When the VTR enters the pause mode during recording and recording restarts, no index signal is marked.

### Manual marking

Press the INDEX button ① on the remote control unit at the point you want to mark an index signal on the tape during recording, timer recording or one touch recording.

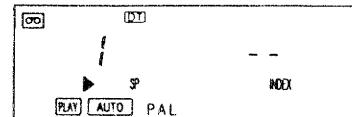


### Notes

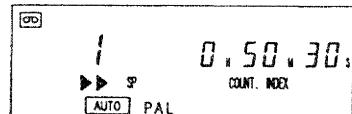
1. The index signal may not be able to be recorded on sections switched between SP and LP-EP.
2. The programme that has been registered at the very beginning of the tape, may not be correctly searched with the index search operation.
3. Press the INDEX button at an interval of more than one minute, during recording. (3 minutes are required in the LP-EP mode.)

## INDEX SEARCH

1. Press the INDEX button ① on the remote control unit in the stop or playback mode.



2. Press the REW button ② or FF button ③ within 10 seconds. The tape will stop at the section recorded with index signal and then played back for five seconds.



(The above display is shown in the FF mode.)

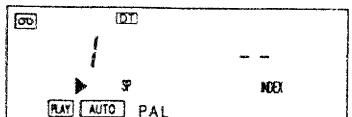
3. Press the PLAY button ④, when your desired programme comes on.

### Note

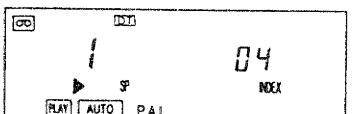
If you record index signals on the tape pre-recorded on another VTR, that recording may become blurred, and index search may not be performed correctly.

## SKIP SEARCH

1. Press the INDEX button ① on the remote control unit in the stop or playback mode.



2. Specify the index number with the number keys on the remote control unit within 10 seconds.



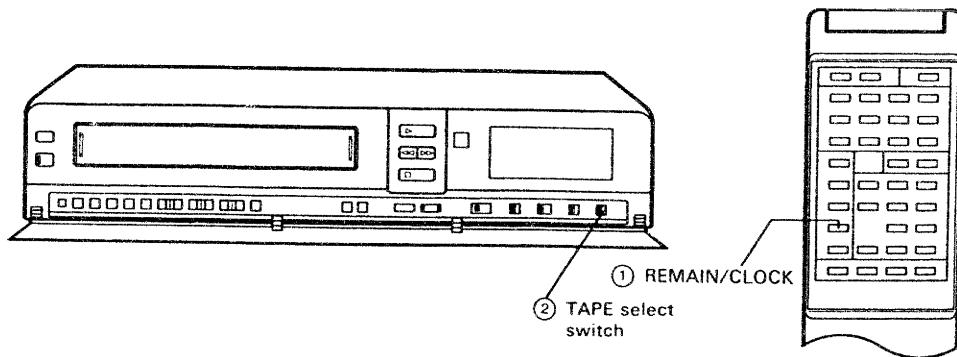
(The above display is shown when the index number is specified to 4.)

3. Press the REW button ② or FF button ③ within 10 seconds. The tape will stop at the section specified with the index number and be played back automatically.

### Notes

1. The index number specification can be up to 99.
2. The number of the index display will decrease by one each time the index signal is skipped.
3. In some cases it may not be possible to skip search a programme that has been registered at the very beginning of the tape.

# TAPE REMAINING DISPLAY



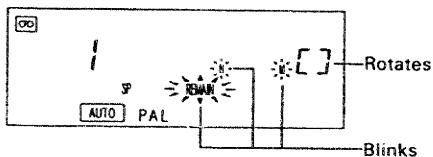
## TAPE REMAINING DISPLAY IN THE STOP MODE

When the REMAIN/CLOCK button ① is pressed with the counter display shown in the display panel, the VTR enters the tape remaining display mode. While the display shows the clock time display, pressing the REMAIN/CLOCK button will let the VTR enter the counter display mode.

When the button is pressed again, the display shows the tape remaining display.

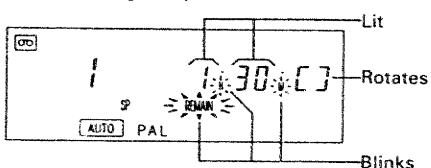
While counting the remaining time:

The display changes to the count mode. (Note: The tape remaining time is displayed for about 5 seconds.)

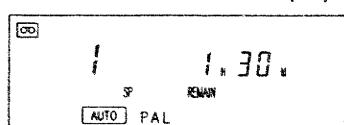


The counting is completed:

The tape remaining time will be displayed. The tape will be rewound to the original position.



When the tape is rewound to the original position. The display returns to the current time display.



### Note

Pressing the button again after the calculation is done will display the contents read. This is not a malfunction.

## TAPE REMAIN DISPLAY IN THE RECORDING OR PLAY MODE

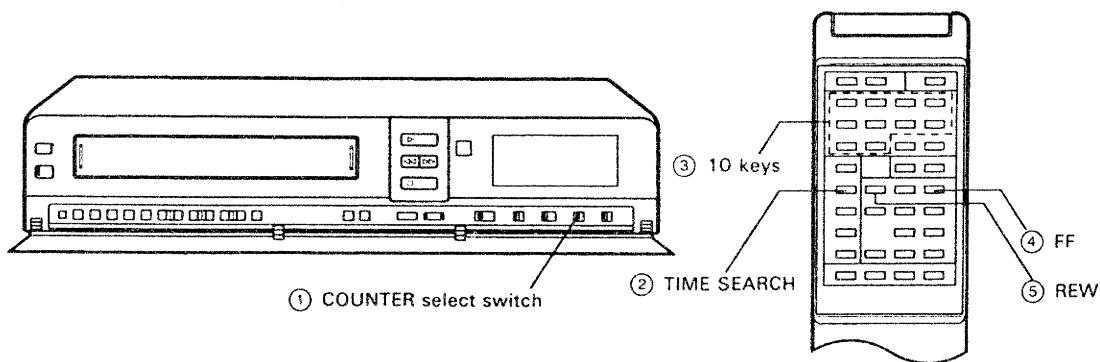
The remaining time on the tape can even be displayed during recording or playback.

1. The tape remaining time is automatically calculated during recording or playback, and is displayed by pressing the REMAIN/CLOCK button ①.
2. If the REMAIN/CLOCK button ① is pressed immediately after beginning recording or playback, the tape remaining time will be displayed after about half a minute.

### Notes

1. Set the TAPE select switch ② to the correct position depending on the tape to be used.  
PAL/MESECAM/SECAM mode  
Use the E-180 position when using a shorter tape than an E-180 video cassette.  
Use the E-240 position when using an E-240 video cassette.  
NTSC mode  
Use the T-120 position when using a shorter tape than a T-120 video cassette.  
Use the T-160 position when using a T-160 video cassette.
2. While in the fast forward or rewinding mode, even if the REMAIN/CLOCK button ① is pressed, the counter display will not change to the tape remaining display.
3. The tape remaining display shows the approximate time remaining on the tape.

# TIME SEARCHING



This feature forwards or rewinds the tape by the amount of the specified time from the current tape time indication, in the play or stop mode.

Set the COUNTER select switch (PAL, SECAM, MESECAM/NTSC) (1) according to the video format of the tape to be played back.

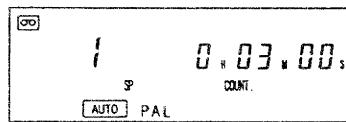
## Example:

Tape...PAL recorded tape

VTR operation mode...Stop mode

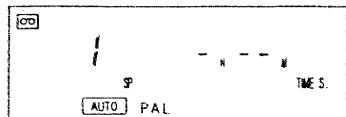
setting time...to advance by one hour fifteen minutes

## Initial display



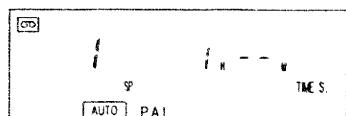
1. Press the TIME SEARCH button (2) on the remote control unit.

Perform step 2 within ten seconds.



2. Press the "1" key of the 10 keys (3) to set the hour time.

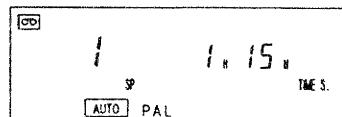
Perform step 3 within ten seconds.



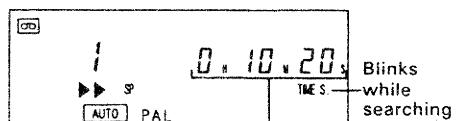
When setting the time searching time of within one hour, input zero hour with the "0" key.

3. Press the "1" key then "5" key of the 10 key (3) to set the minutes time

Perform step 4 within ten seconds.

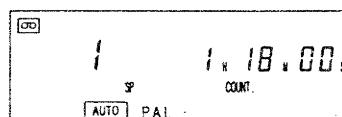


4. Press the FF button (4) or the REW button (5) to forward or rewind the tape. For this example, press the FF button (4). Time searching starts.



The set time counts down when searching begins.

5. Upon completing searching the set time the VTR enters the stop mode, showing the reading of about 0H00M00S in the display.



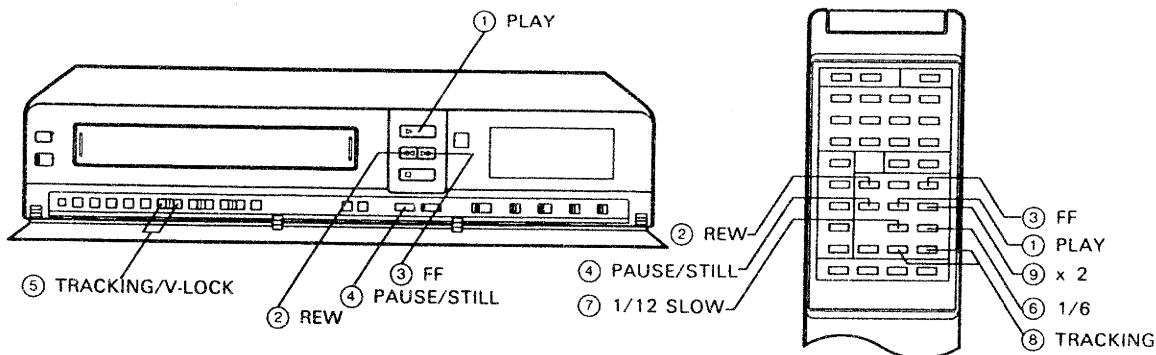
## Notes

1. In the play mode, time searching is performed in the forward picture search and reverse picture search mode.

After time searching has finished at the counter reading of about 0H00M00S, the VTR enters the normal play mode automatically.

2. The time display may show a not accurate but approximate time indication.

# SPECIALIZED PLAYBACK



## PICTURE SEARCH

1. Press the PLAY button ①.
2. When the REW button ② or FF button ③ is pressed, the picture moves quickly (about 7 times the normal speed in PAL/SECAM/MESECAM mode and 5 times the normal speed in NTSC mode) in reverse or forward direction, and you can search for the desired parts of a programme.

### Notes

1. When playing back recorded tape in the picture search mode, the skewed picture may appear and/or colour may disappear.
2. During picture search operation, if the picture rolls vertically on the TV screen, adjust the V-HOLD knob on the TV set.
3. During the picture search operation, the sound will be muted.

## STILL PICTURE

1. Press the PLAY button ①.
2. To stop the tape momentarily or to watch a still picture during playback press the PAUSE/STILL button ④.
3. Press the PAUSE/STILL button ④ again to release the still picture and return to normal playback.

If noise appears in the still picture, perform manual tracking adjustment in the slow play mode to set the tracking to the best point. Then, play a still picture.

## STABILITY OF STILL PICTURE

When the PAUSE/STILL button ④ is pressed and the picture is slightly distorted and flickered, press the TRACKING/V-LOCK button ⑤ to adjust the stability of the picture. Doing this may reduce this problem.

### Notes

1. The still mode will cease automatically after a lapse of approximately 5 minutes. The VTR will return to PLAY from STILL.
2. Even the tape pre-recorded with another VTR is played back in the still mode and adjusted with the TRACKING/V-LOCK buttons, the distortion of the picture might still remain.
3. The NTSC tape playback in the still mode may cause the reproduced picture to flicker on the TV screen.

## FRAME ADVANCE

1. Press the PLAY button ① (in play mode).
2. Press the PAUSE/STILL button ④ (in still mode).
3. Press the PLAY button ①. One press on the PLAY button ① will advance one frame on the tape.
4. Release the PLAY button ① and then press the PAUSE/STILL button ④. The VTR returns to normal playback.

## SLOW PLAY

Press the SLOW button allows you to play back the picture at 1/6 or 1/12 the speed of normal playback.

1. Press the PLAY button ①.
2. Press the 1/12 SLOW button ⑦ or 1/6 SLOW button ⑥.
3. Press the PLAY button ① again to resume normal playback.

## STABILITY OF SLOW PICTURE

When noise appears in the slow mode, adjust the TRACKING/V-LOCK buttons ⑤ on the VTR or the TRACKING buttons ⑧ on the remote control unit for better picture playback.

### Notes

1. The slow mode will cease automatically after a lapse of approximately 5 minutes. The VTR will return to PLAY from SLOW.
2. Even the tape pre-recorded with another VTR is played back in the slow mode and adjusted with the TRACKING/V-LOCK buttons, noise might still remain in the slowplay picture.

## DOUBLE SPEED PLAYBACK

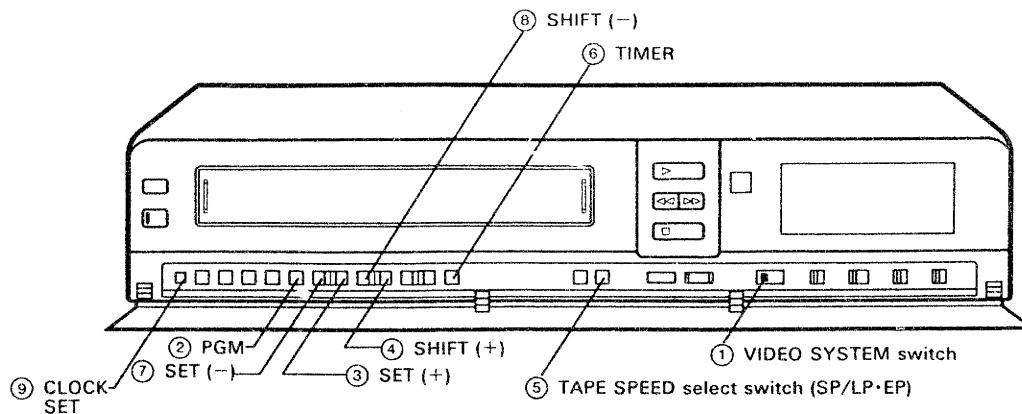
Pressing the X2 button allows you to play back the picture at a speed double the normal playback.

1. Press the X2 button ⑨ in the play, stop or slow mode.
2. Press the PLAY button ① again to return to the normal play mode.

### Note

- When a cassette tape prerecorded in the LP mode of PAL, SECAM or MESECAM is played back in the still, slow, frame or double speed play mode, the picture may be reproduced without color, the color is of poor quality.
- DT (DIGITAL TRACKING) can function only in the play mode, this function does not activate in the specialized playback mode.

# TIMER RECORDING



The timer in this VTR can hold eight preset programmes over a 4 week (28 days) period. These programmes may be for one time recordings, recording at the same time every day or recording on the same day of the week. The clock has a 24 hour format. This VTR is capable of 28-day timer setting, and is designed to start timer recording when the TIMER button is pressed.

## OPERATING OUTLINE

### ● SHIFT (+/-) button

This button is used to move the programming item while making a programme. The blinking position moves.

### ● SET (+/-) button

This button is used to change the programming contents of the blinking position while making a programme.

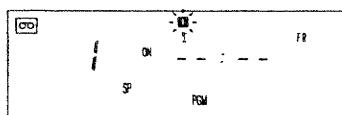
### ● Be sure to check the clock setting is completed before doing timer recordings.

### ● Be sure to check the cassette for recording, has a safety tab.

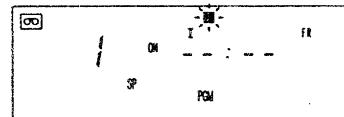
**Example:** To preset channel 25 in programme 2 from 13:30 to 14:20 of the next week on Tuesday, in SP mode. (Today is Friday at 9:00)

1. Set the VIDEO SYSTEM switch ① according to the broadcast system of the programme to be recorded. (For more details, refer to section "RECORDING" on page 17.)

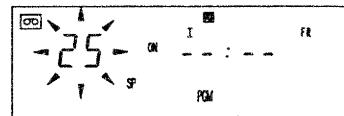
2. Press the PGM button ②, to enter the timer programme mode position.



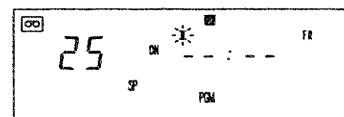
3. Press the SET (+) button ③ to set "2" position.



4. Press the SHIFT (+) button ④. The channel indication will be flashing. Set the channel to "25" with the SET (+) button ③.



5. Press the SHIFT (+) button ④. The week indication will be flashing. Set the week to the "II" position with the SET (+) button ③.



Pressing the SET (+) ③ will change the week indication from I → II → III → IV → WKLY to DAILY cyclically.

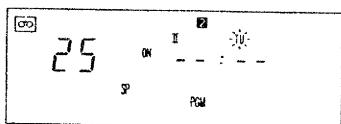
When the week indication is set to WKLY (WEEKLY), you can record the programme of the same time every week. When the week indication is set to DAILY (the indication of all the days such as SU, MO, TU, WE, TH, FR, and SA will light), you can record the programme of the same time every day.

### Notes

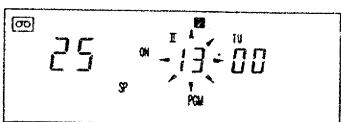
1. If you pass the desired time or setting position inadvertently, use the SET (-) button ⑦ to display the correct indication.
2. If you want to return to the previous setting step, use the SHIFT (-) button ⑧.

# TIMER RECORDING

6. Press the SHIFT (+) button ④. The day indication will be flashing. Set the day to the "TU" position with the SET (+) button ③.



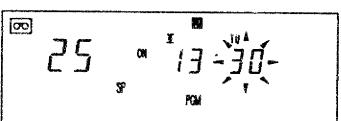
7. Press the SHIFT (+) button ④. The on time hour indication will be flashing. Set the on time hour to "13" with the SET (+) button ③.



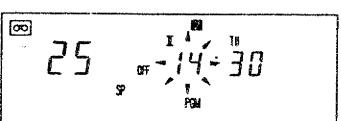
**Note**

When the SET (+) button ③ or SET (-) button ⑦ is pressed once, the current time will be displayed on the on time indication.

8. Press the SHIFT (+) button ④. The on time minutes indication will be flashing. Set the on time minutes to "30" with the SET (+) button ③.

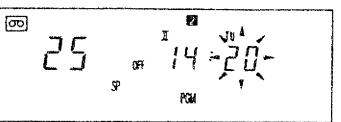


9. Press the SHIFT (+) button ④. The off time hour indication will be flashing. Set the off time hour to "14" with the SET (+) button ③.

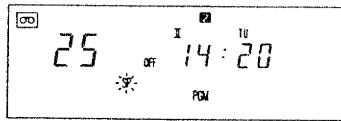


When the SET (+) button ③ or SET (-) button ⑦ is pressed once, the set time for on time will be displayed as off time.

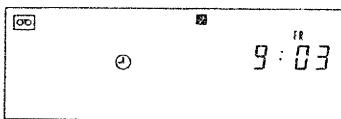
10. Press the SHIFT (+) button ④. The off time minutes indication will be flashing. Set the off time minutes to "20" with the SET (+) button ③.



11. Press the SHIFT (+) button ④. Then select the tape speed (SP or LP·EP) with the TAPE SPEED select button ⑤ or SET (+) button ③. Set it to the SP position.

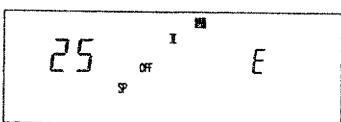


12. Press the TIMER button ⑥.



**Notes**

1. When no cassette is loaded, timer recording is not possible. In this case, the "E" indicator is displayed while the TIMER button ⑥ is pressed.

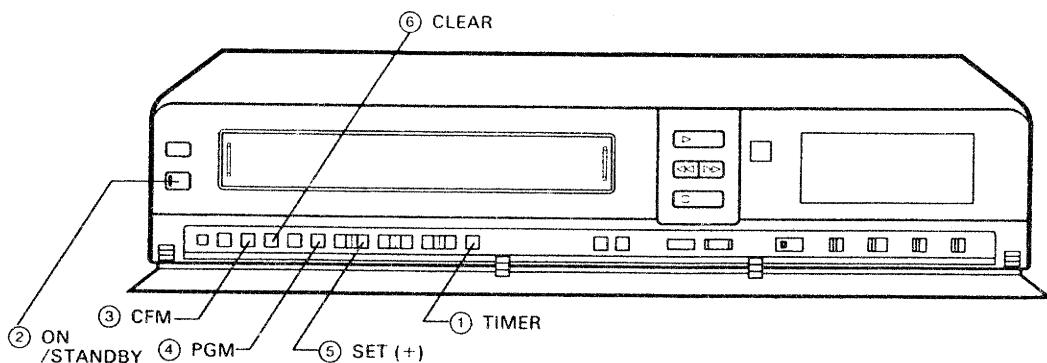


2. If the cassette tab has been removed, timer recording is also not possible. At this time, the cassette is ejected automatically.
3. When the clock is flashing after a power interruption as shown below, the preset programmes become ineffective. Reset the VTR clock to the current time with the CLOCK SET button ⑨ and do the programme setting from the beginning.



4. To proceed to another programme setting after step 9 press the SHIFT (+/-) buttons ④ or ⑧ to select the programme number position and set the programme number with the SET (+) button ③.
5. When you want to stop programme setting, press the PGM button ②. The clock display is shown.
6. Timer setting is possible even in standby mode.

# ADDITIONAL INFORMATION FOR TIMER RECORDING



## TO USE THE VTR AFTER SETTING THE PROGRAMMABLE TIMER

1. Press the TIMER button ① to release the timer mode.
2. Press the ON/STANDBY button ② to turn on the VTR.
3. After use, be sure to press the CFM button ③ to verify the contents of the stored programmes.
4. To enter the timer mode again, press the TIMER button ①.

## TO CHANGE TIMER PROGRAMME DATA

1. Press the TIMER button ① to release the VTR from the timer recording mode. The timer indicator (②) goes off.
2. Press the PGM button ④ to enter the timer programme operation mode.
3. Select the programme number to be changed with the SET (+) ⑤ and change programming data.
4. Press the PGM button ④ again. To enter the timer recording mode, press the TIMER button ①.

## TO CANCEL THE TIMER PROGRAMME

1. Press the TIMER button ① to release the VTR from the timer recording mode. The timer indicator (②) goes off.
2. Press the PGM button ④ to enter the timer programme operation mode.
3. Specify the programme where the programme data to be cancelled are placed, with the SET (+) button ⑤.
4. Press the CLEAR button ⑥. The timer off time and channel are also erased.

## TO CHECK THE TIMER PROGRAMME

The following method is available to check the data preset in the timer programme.

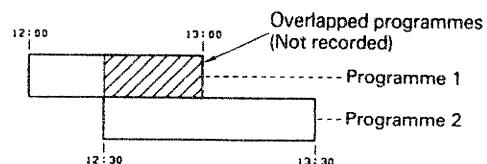
1. Press the CFM button ③.

The fluorescent display will show the contents of programmes 1 through 8 (start time and end time) that were previously stored continuously at an interval of about five seconds and return to the original display.

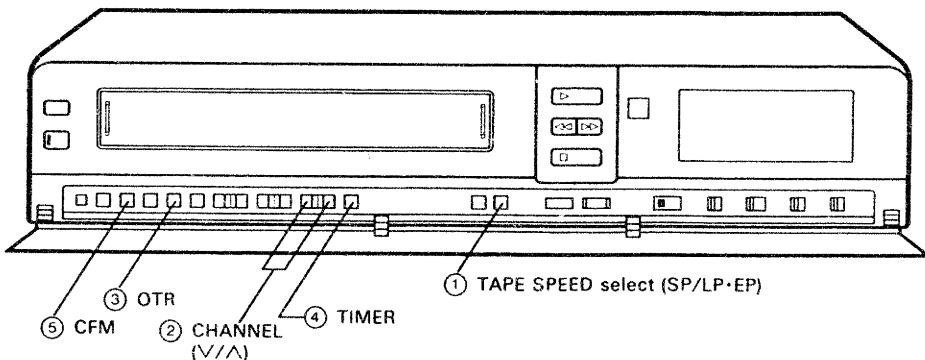
When any effective programme data has not been memorized, the "E" indicator appears in the display.

## PROGRAMME OVERLAPPING

Be careful not to overlap the preset times. If you happen to overlap the preset programmes, start time has priority in execution, and the overlapped programme will not be recorded. See figure below.



# ONE TOUCH TIMER RECORDING



This VTR unit features a one touch recording (OTR) function. This function allows you to record at 30 minute periods, for up to 4 hours.

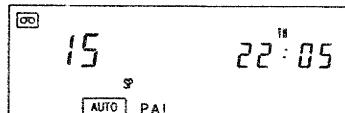
After the recording is completed, the power goes off automatically.

Also, when setting the timer, the off time can be set at 30 minute periods. The One Touch Recording (OTR) mode takes priority over other VTR operation modes. For example, when the OTR mode is activated while the VTR is in the timer mode, the VTR will automatically return to the timer mode after the OTR mode is completed.

## OTR OPERATION

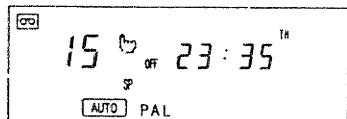
Example: To record channel 15 starting from now for 1-1/2 hours at a current time on Thursday, 22:05.

1. Set the recording speed (SP/LP·EP) with the tape speed select button ①.
2. Select channel 15 by pressing channel select buttons (up/down) ②.

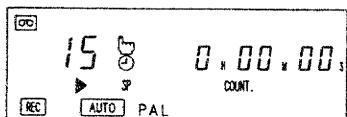


3. Press the OTR button ③ to set the recording time. When the OTR button ③ is pressed once: 22:35 (30 minutes).

4. When the OTR button ③ is pressed twice: 23:05 (1 hour)  
When the OTR button ③ is pressed three times: 23:35 (1 hour and 30 minutes)



5. Press the TIMER button ④ within 10 seconds.



### Notes

1. Thirty minutes are added every time the OTR button ③ is pressed, for up to 4 hours (eight times). (The one touch timer can only be set in 30-minute units.)
2. One-Touch Recording does not function while the VTR is in the timer programme confirmation mode, channel setting mode and clock setting mode.
3. When the CFM button ⑤ is pressed while the VTR is in the one-touch timer recording mode, the VTR shows the programme ending time (OFF).

### Error indication

When the TIMER button ④ is pressed without setting timer on/off time, or without a cassette in the compartment, the "E" indicator lights (while the TIMER button ④ is pressed).

- Each time you press the OTR button ③, the indication will change as follows.

